M400 Series Industrial Modem

User Manual

E-Lins Technology Co., Ltd

ADDRESS: 1007A, MinTai Bld., Minkang Road, Minzhi Street, Bao'an District, ShenZhen, 518000, China

PHONE: +86 (755) 33231620

Email: sales@szelins.com

WEB: http://www.szelins.com

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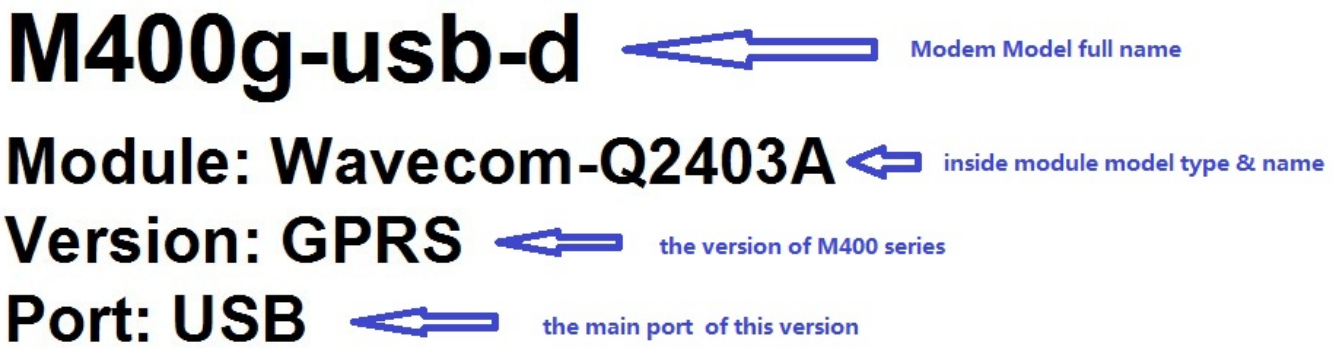
Chapter 0

0 Preparation job before configuration

1) For GSM/GPRS/EDGE/HSDPA/HSUPA/HSPA/HSPA+/4G LTE version or TD-SCDMA version, please get a SIM card with data business.
2) For CDMA2000 EVDO/CDMA1x version, please get a UIM card with data business or inform us before order if the network uses non-ruim (nam-flashing).
3) Make sure the sim card or uim card is with enough data business and balance.
4) Make sure the signal is good enough where you test or install the router. Weak signal will make the router no work. If you find your signal strength is not good, please contact us for high gain antenna.
5) Find the modem type at the cover of the router. It marks some characters like “M400g-usb-d, GPRS version).
Explanation for marks as follows



:

And follow the “at command” with related “at command” manual. Each module gets it’s own at command manual, please do not mix.

Chapter 1

1 Prologue

This document is just suit for the following mode type; it helps you quickly to used M400 Modem function and

resolves some common questions.

Type	Marks
M400g	GPRS version
M400e	EDGE version
M400ev	EVDO Modem
M400d M400u	HSDPA Modem HSUPA Modem

1.1 Referenced Documents

M400 Series Modem Datasheet at http://www.szelins.com/download/M400_Datasheet_Eng.pdf

1.2 Notice

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Chapter 2

2 Introduction

2.1 Brief

With the development of wireless communication technologies, wireless products are being adopted in numerous industrial and civilian fields. E-Lins Technology Co., Limited is a leader of wireless communication equipment manufacturer releases the Wireless Modems, which support various frequency bands of GSM/GPRSEDGE/EVDO/HSDPA, and provide industrial terminal solutions for 2G/2.5G/2.75G/3G communication.

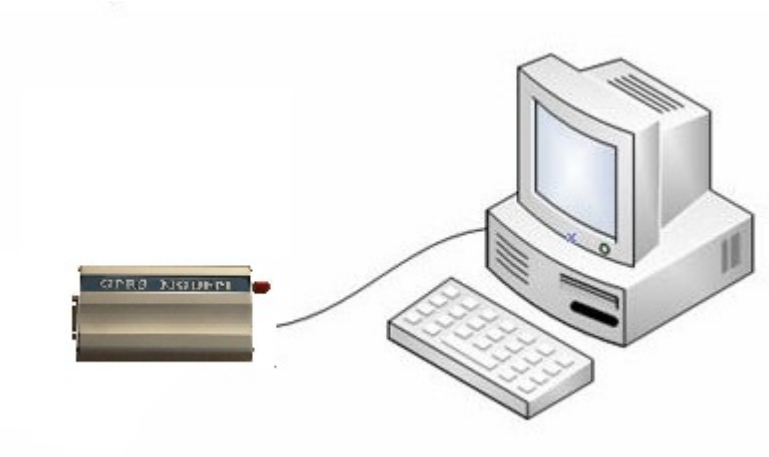
M400 series wireless modem adopts industrial level modules, specially designed for the complicated industrial environment which compatible with EMC, and will be your best choose of wireless communication.

Chapter3

3 Getting Started

3.1 Connect to product

Please connect antenna and cable for M400 modem. Connect the M400 modem to PC to start configuration and test.



3.2 Insert SIM Card

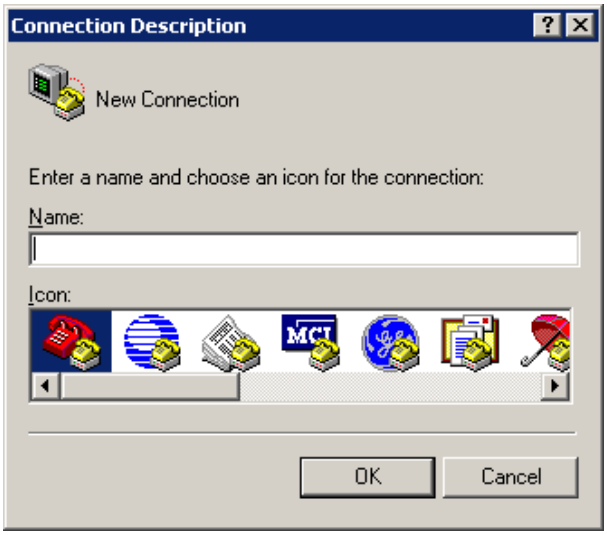
Open the SIM Card Slot and insert into SIM card,

3.3 Hyper Terminal

1) Open the HyperTerminal

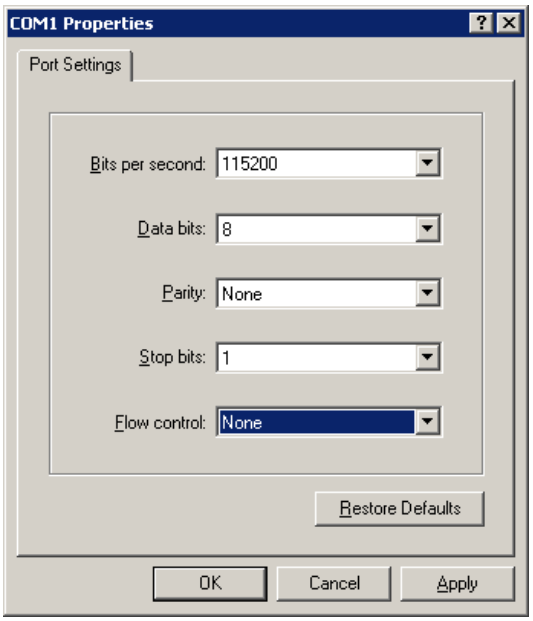
HyperTerminal
by Hilgraeve Monroe, Michigan USA
For more power and convenience, upgrade to hot new HyperACCESS, TODAY!
Developed for Microsoft by Hilgraeve Inc.
升级信息...
Copyright 1999 Hilgraeve Inc.

Input a name you wanted in the following screen.



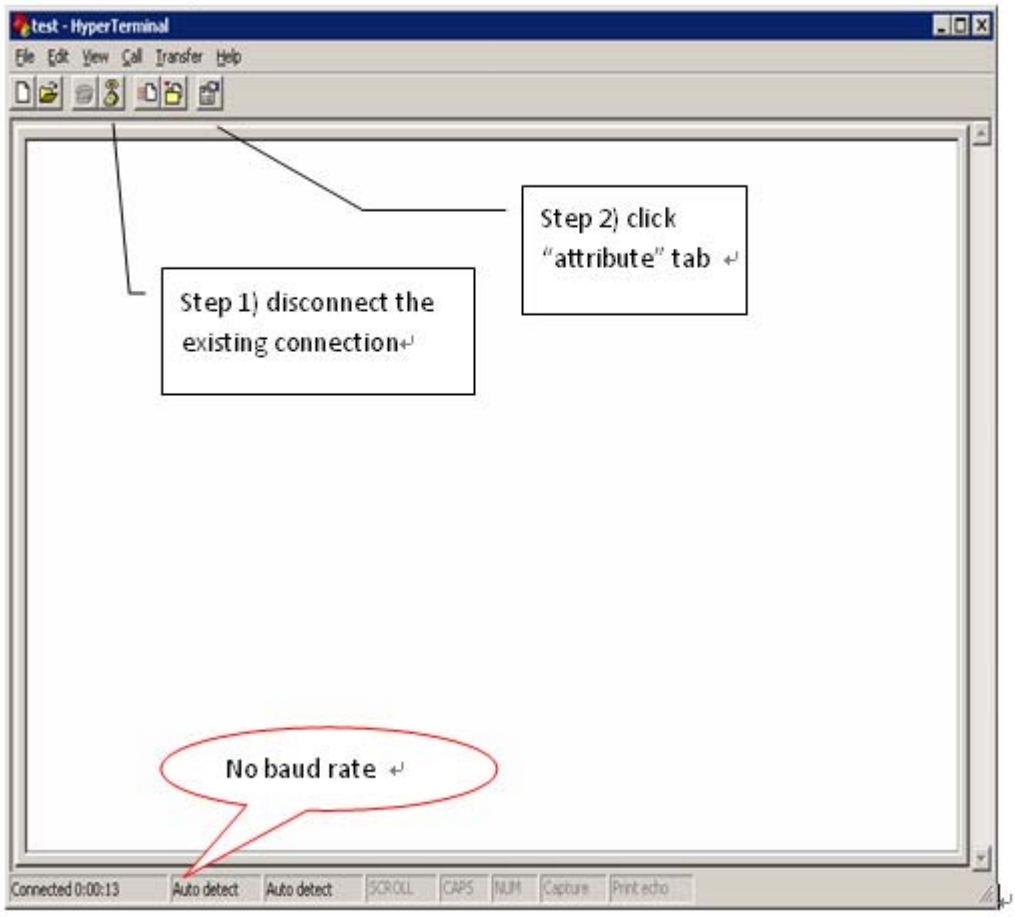
Choose a right COM port

The right configuration as following.

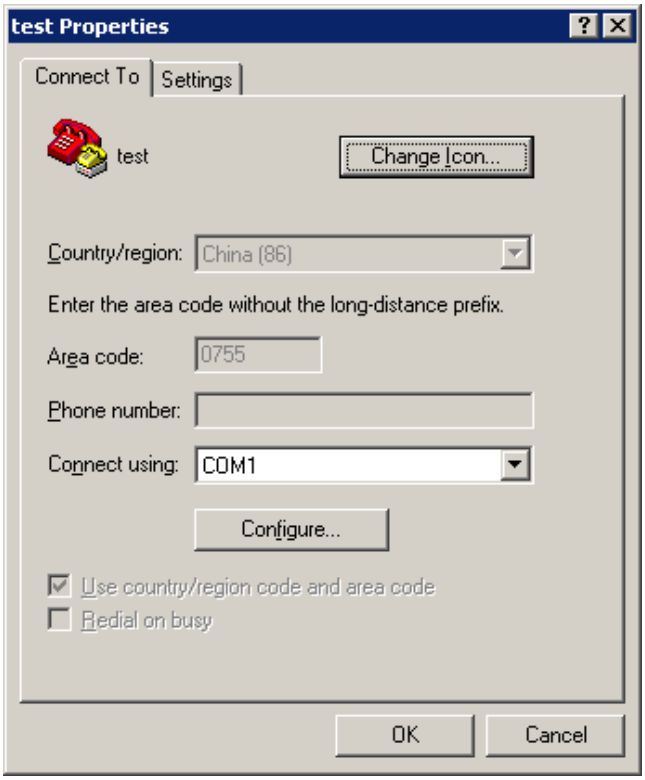


Notes: Some modem the “Bits per second Baud Rate” is not 115200, then please try 9600 or 19200 or others. If still problem, please contact us.

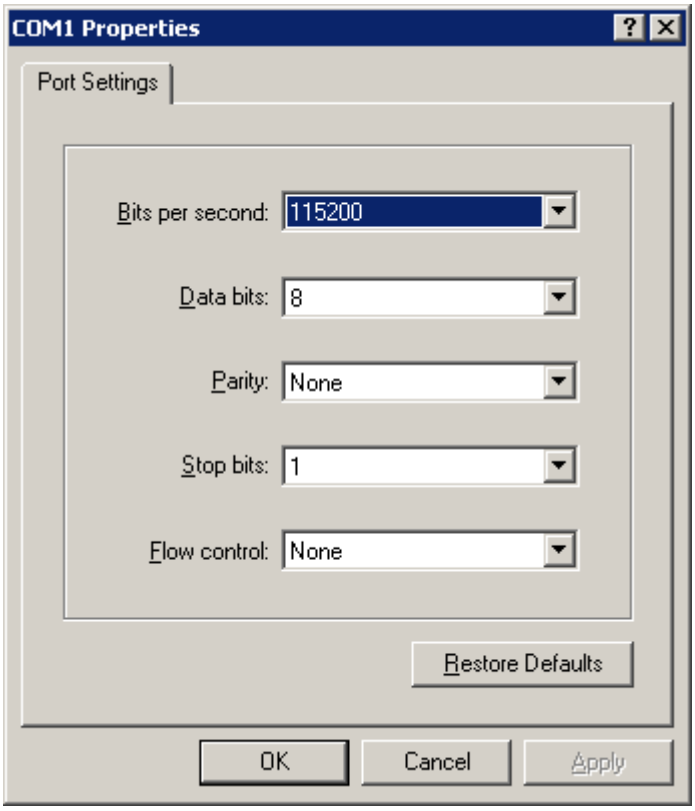
When your start the Hyper Terminal, it is not connected actually. You can see the red mark of follow picture without any number. So we have to make the hyper terminal work. Firstly disconnect existing connection. Secondly, click the “Attribute” tab.



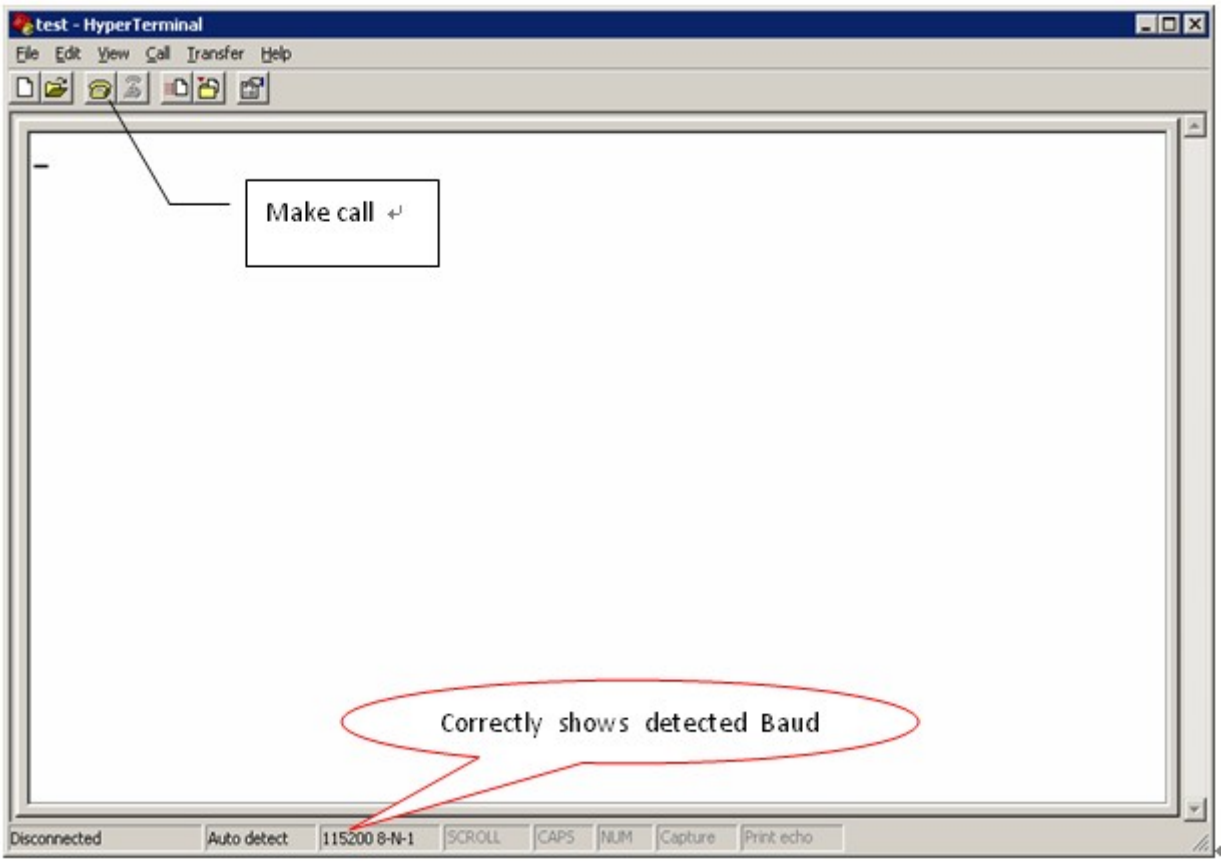
Click the “configure” button, and double confirm your modified configuration



Double confirm your modified configuration and click “OK”



Then you can see it appeared baud rate on white label, then click the black label to make call



Power on M400 modem to start the at command with Hyper Terminal.

3.4 Test command

Test AT command

AT<CF>	//Test “at“command
I/OK	//Response ok parameter if successfully connected, you can make sure the module have no malfunction
AT+CSQ<CF>	// to check the Signal quality
+CSQ: **, ##	// ** Should be the number between 10 and 31, the signal quality becomes better as the number grows. ## should be is 99, Or you should checking the equipment of antenna or SIM card.

For example, you can type “at”, it returns “OK”;
You type “at+csq”, it returns “+csq: 15,99 OK”; or “+csq: 15,0 OK”
You type “ati”, it returns the module info as follows

```
at
OK
at+csq
+csq: 15,99

OK
ati
Manufacturer: SIMCOM INCORPORATED
Model: SIMCOM_SIM5216E
Revision: 1575B07SIM5216E
SIM5216E_1575_101125_V1.16
QCN:
IMEI: 359769030900499
+GCAP: +CGSM,+DS,+ES

OK
```

If it's successful in testing command above, you can begin to use Modem

Chapter 4

4 Configure

4.1 SMS

How to used SMS:
Please refer to the related "at command" manual.

4.2 CSD

Notes: The following manual only show some tips of the operation. For details, please refer to the detailed related at command manual

4. 2.1 Introduce CSD
CSD (Circuit Switched Data) is 9.6kbps speed circuit Switched Data from GSM network,
GSM+2 operations could attainability 14.4kb/s speed. and encrypts the data at the same time, so the GSM system has the encryption function. It can connect with the line Modem,

4.2.2 Getting started

- Connect two modems with each two computers" cable and open up Hyper Terminal
- Setting Modems baud rate 9600bps
- Register the CSD function. if you used this function, the SIM card have Register CSD. Dredge CSD Function usually have two number. one is "pn" for voice message .and other is" un" for date message

4.2.3 Mutuality command

4.2.3.1 Generally command

ATD136******	//make call
ATA	//answer a call
+++	//Switch from date mode or PPP online mode to command mode
ATO	//Switch from command mode to data mode or PPP online mode
ATH	//Disconnect existing Connection

4.2.3.2 Set the auto answer in ringing

ATS0=n	//Set number of ring before automatically answering the call
AT+IPR=n	//Setting Baud Rate of Module (default is auto-acclimatize)

4.2.4 Test

Initialization commands"

AT&F0	// renew default parameter
AT+IPR=9600	// setting fixed baud rate
AT&W	// save parameter

Initialization command of Callee

ATS0=1

Initialization command of caller

ATD[dn]	//note: not ending as" ; "is data call, end as";" is voice call make call [dn]is data number.

Callee answer command

ATA	// answer call

Communicate account command

+++	// abort communicate, return command mode
ATO	// Switch from command mode to data mode or PPP online mode

Disconnect existing Connection

ATH	// Disconnect existing Connection，in command mode

When Callee receives a ring, it answers automatically. Both them will show connect 9600and enter data state .then you can used CSD.

There is a simple test course; it is suitable for modem products, and fit for the wireless modem connect with line modem.

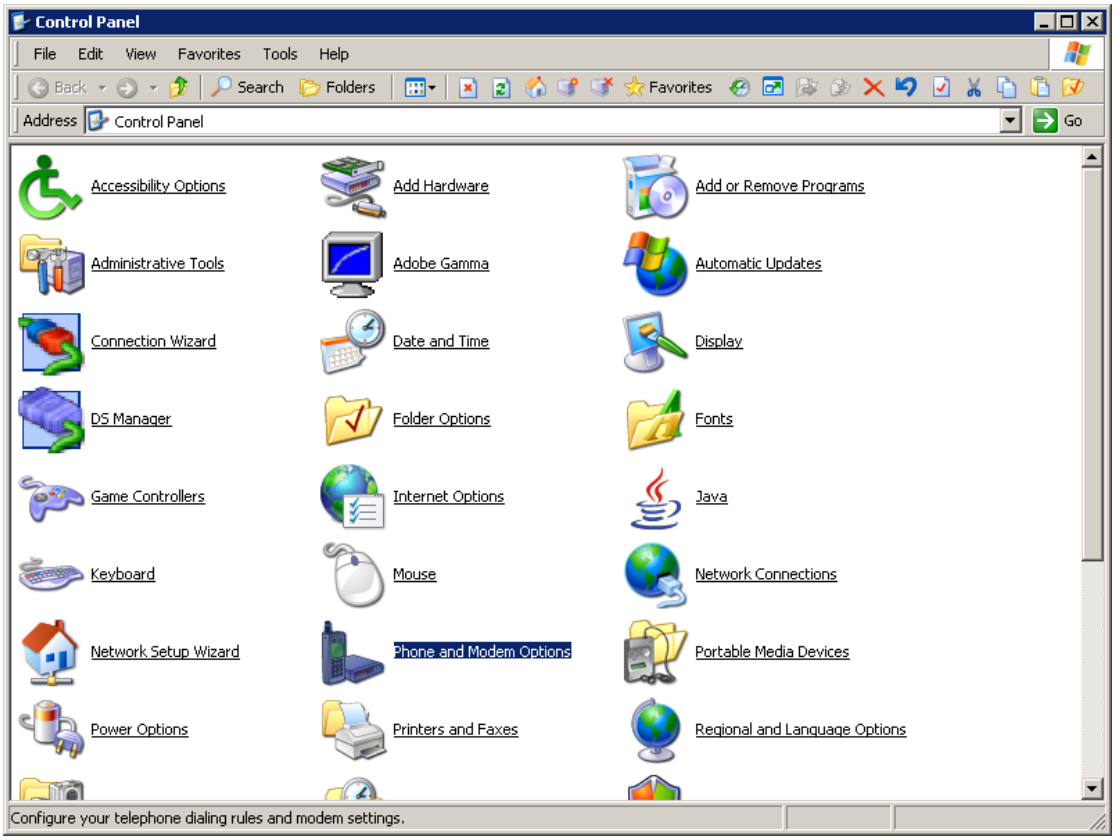
The Connecting mode of the CSD is same with line modem, even replace, but it is expensive, and not always online, only point to point, can not be one point to many points (center need to use modem, if come true point to point)

4.3 Dial-up

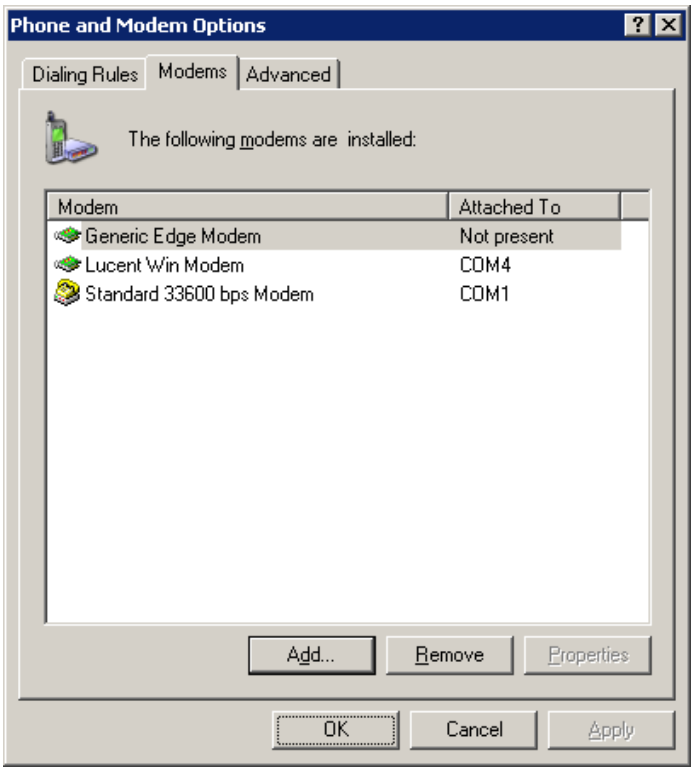
Dial-up to connect network in windows XP operation System

Step 1) Setup Modem

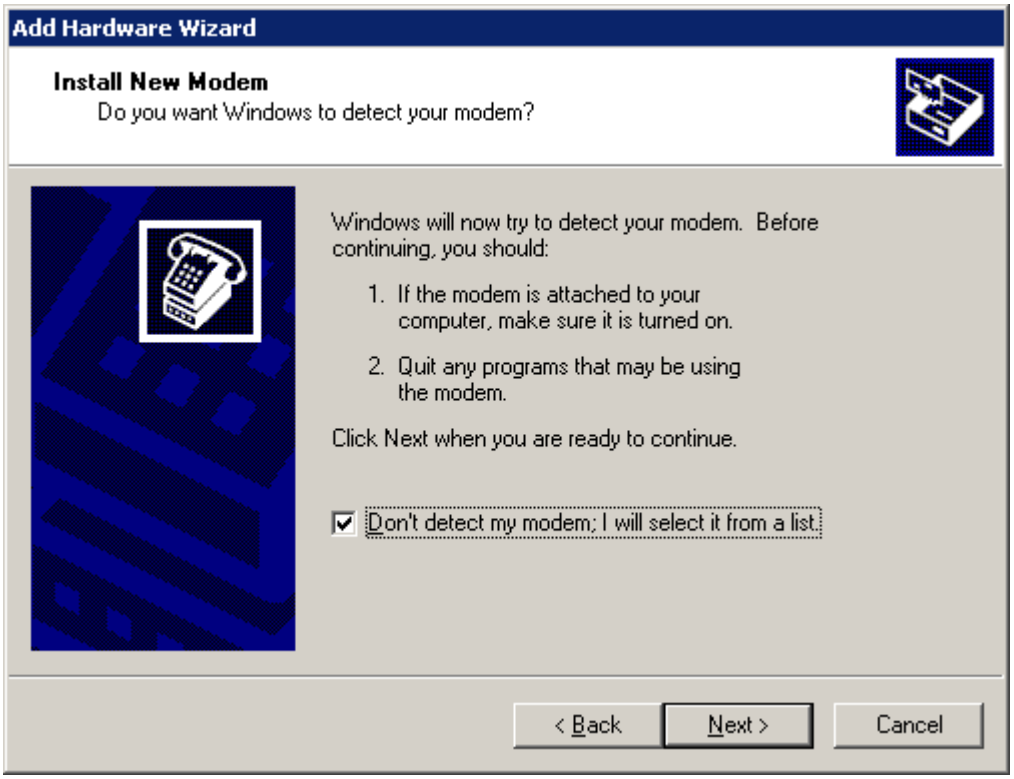
Please connect M400 modem with your computer via rs232 interface cable. Start from “Control Panel”, click “Phone and Modem Options”, and select “Modem”:



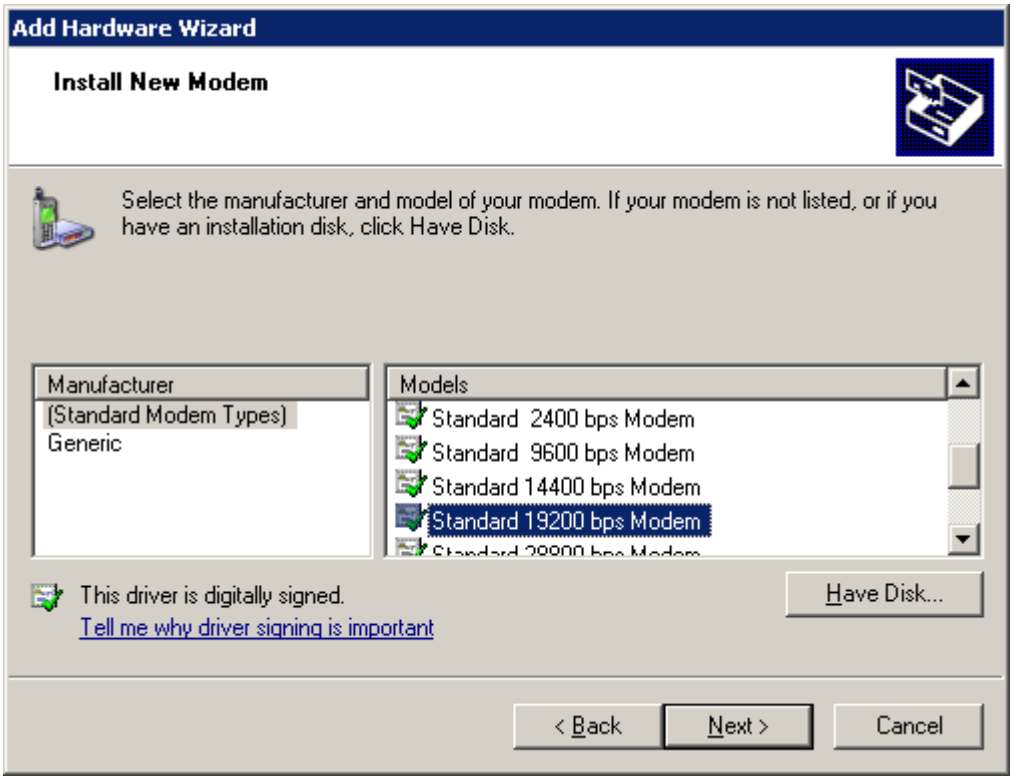
Click “Add…” to add a new modem:



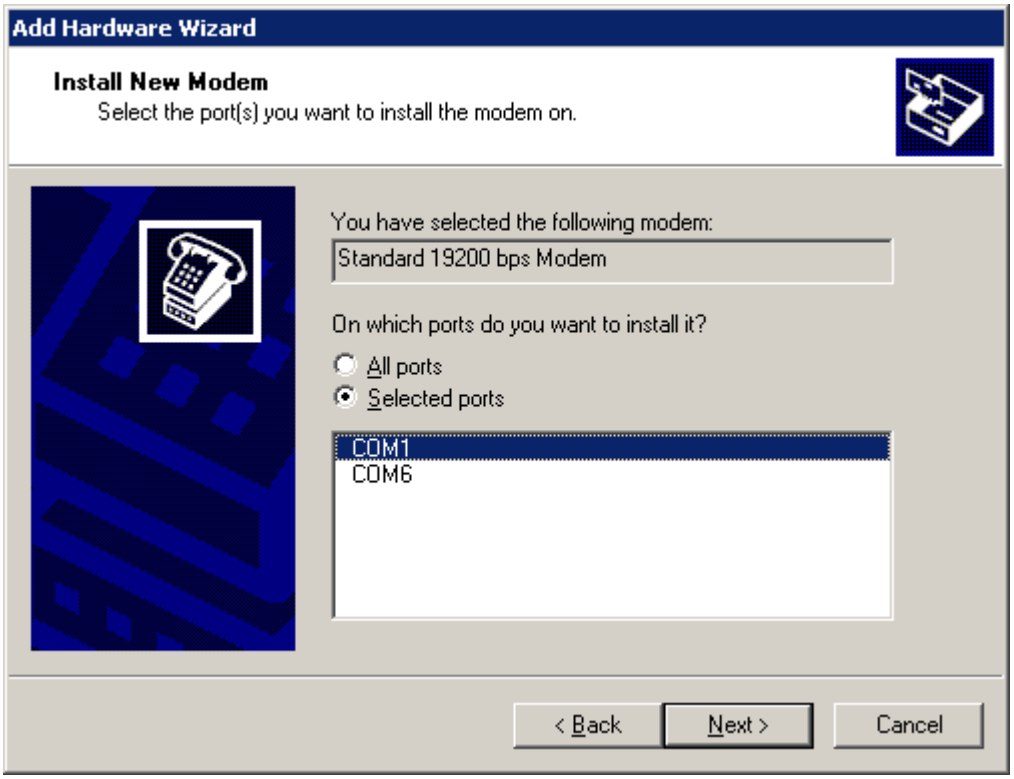
Tap “Don’t detect my modem; I will select it from a list “, and then click” Next” to continue


Add Hardware Wizard
Install New Modem
Do you want Windows to detect your modem?
Windows will now try to detect your modem. Before continuing, you should:
1. If the modem is attached to your computer, make sure it is turned on.
2. Quit any programs that may be using the modem.
Click Next when you are ready to continue.
Don't detect my modem; I will select it from a list.
< Back
Next >
Cancel

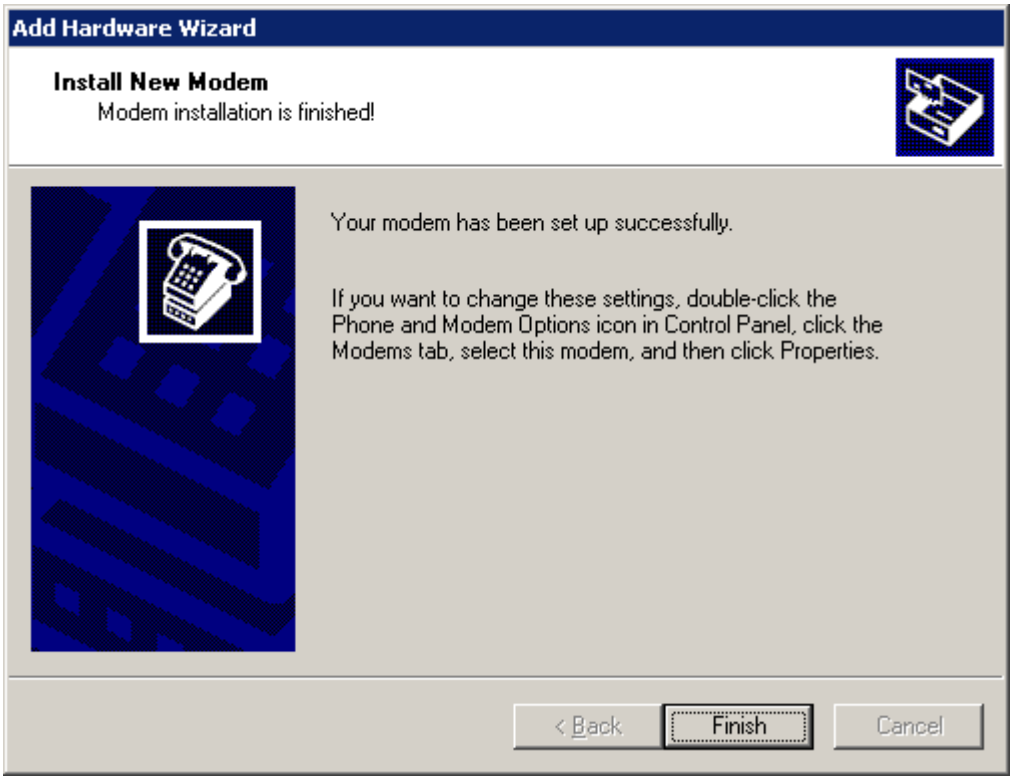
When appear “install new modem” dialog box, choose “standard Modem Types” in the left manufacturer, and choose “Standard 19200 bps Modem” in the right models


Add Hardware Wizard
Install New Modem
Select the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
Manufacturer
(Standard Modem Types)
Generic
Models
Standard 2400 bps Modem
Standard 9600 bps Modem
Standard 14400 bps Modem
Standard 19200 bps Modem
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

Select COM port: Choose the right port (it depends your computer, may be not "COM1", and click "Next" to finish installation.

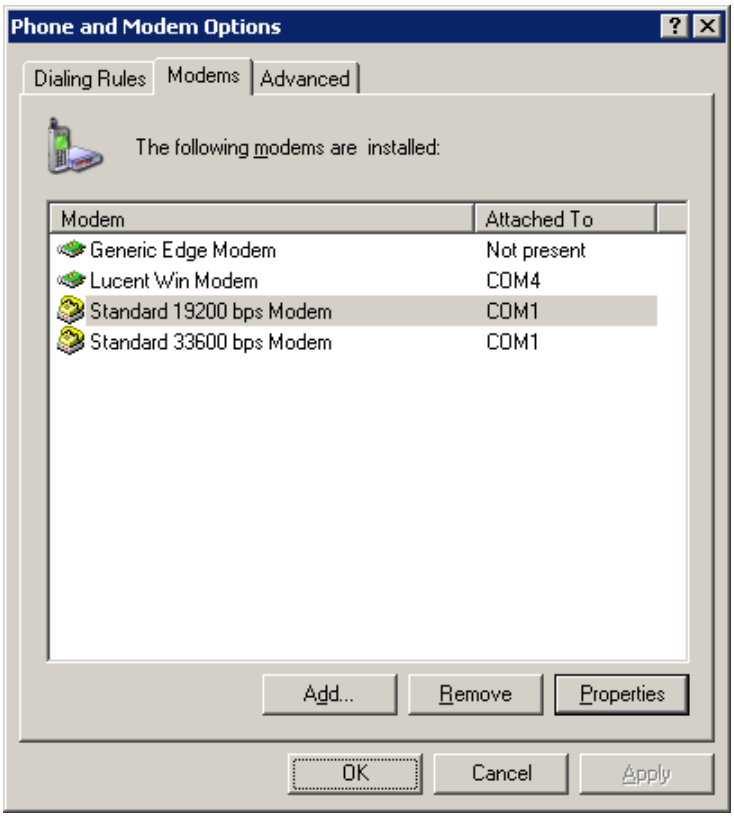


When appear Following Frame, Click "Finish" to succeed your modem installation.

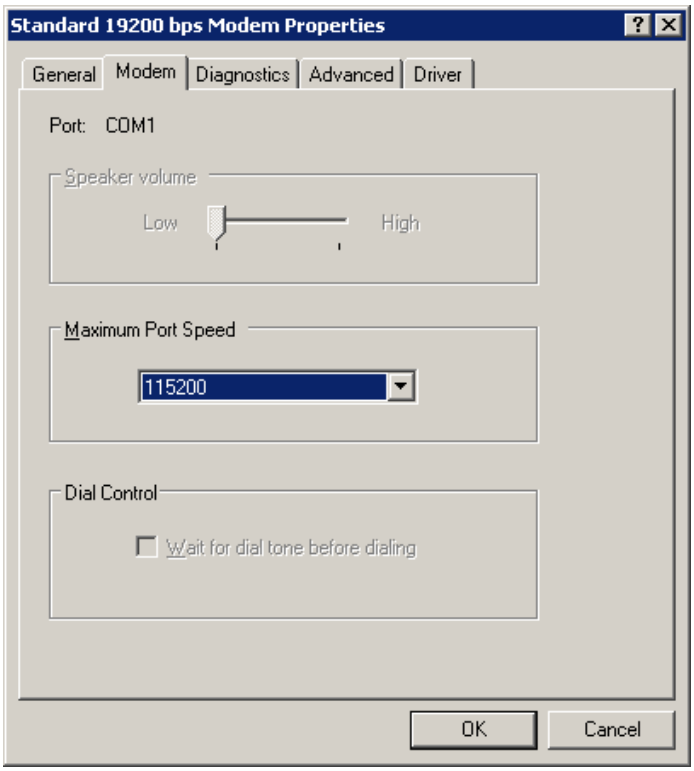

Add Hardware Wizard
Install New Modem
Modem installation is finished!
Your modem has been set up successfully.
If you want to change these settings, double-click the Phone and Modem Options icon in Control Panel, click the Modems tab, select this modem, and then click Properties.
< Back
Finish
Cancel

Step 2) Setup 19200 Modem

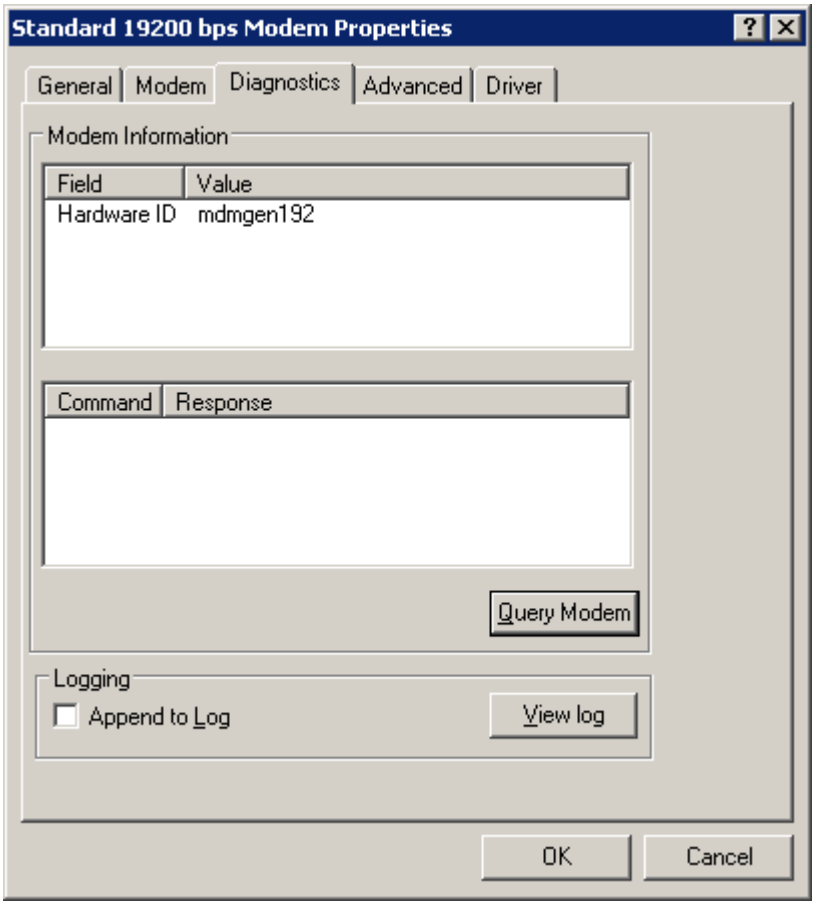
Click “Phone and Modem Options” from “Control Panel”, Click “Modems” tab; select the modem we just added. It’s ” Standard 19200 bps modem”, and then click “Properties” button.



At “Modem” tab, set the “Maximum Port Speed” to “115200”.



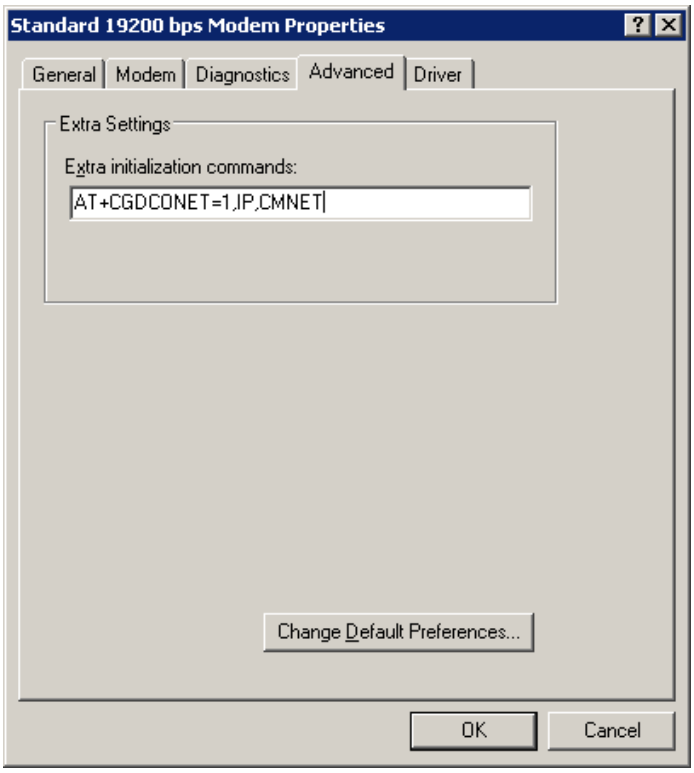
Choose “Diagnostics” tab, click the “Query Modem, if Baud Rate setting is correct, it will automatic indication some command and returned result.



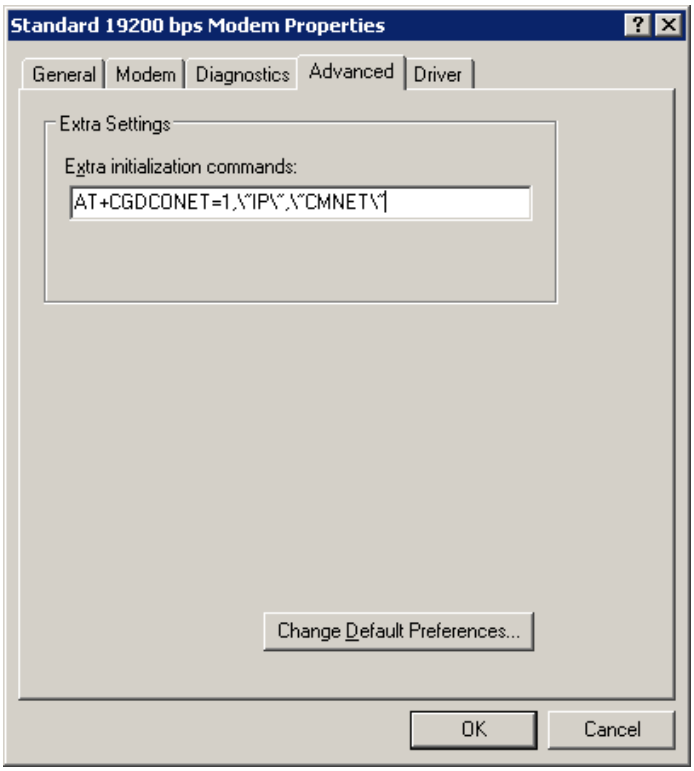
Next, click “Advanced” tab, Here, you can add or change settings by filling in Extra initialization commands at “Advanced” tab

M400 version type	Extra initialization commands
M400g, M400e, M400d, M400u, M400p	Depends on module, it has three kinds of commands, please check one by one. If still problem, contact us freely. Option 1: AT+CGDCONET=1, "IP", "APN" Option 2: AT+CGDCONET=1, IP, APN Option 3: AT+CGDCONET=1, \"IP\", \"APN\"
M400c, M400ev	AT&D2
M400td	AT+CGDCONET=1, "IP", "APN"

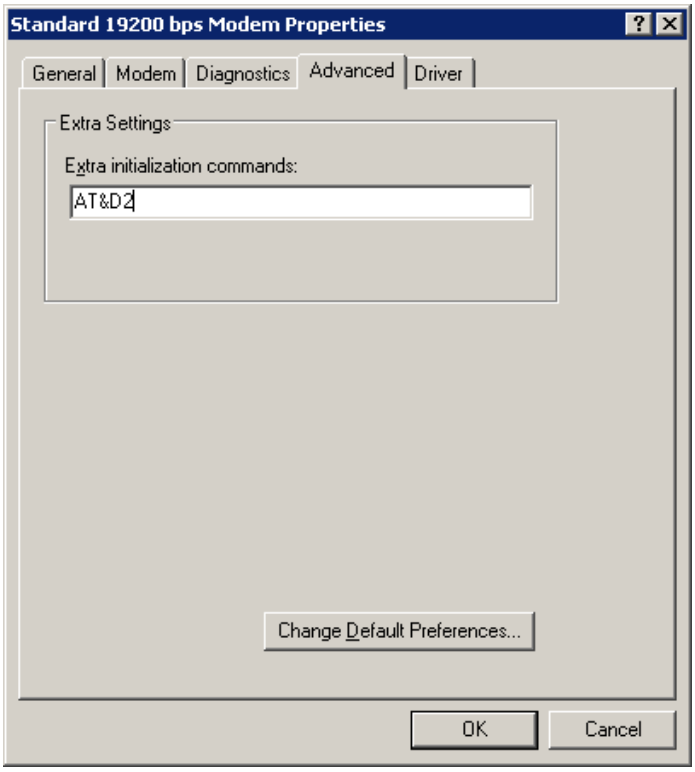
Notes: APN is from the ISP/Network Carrier. Please make sure is correct, otherwise the m400 modem will not work well.



（this picture is the example to the modem for reference）



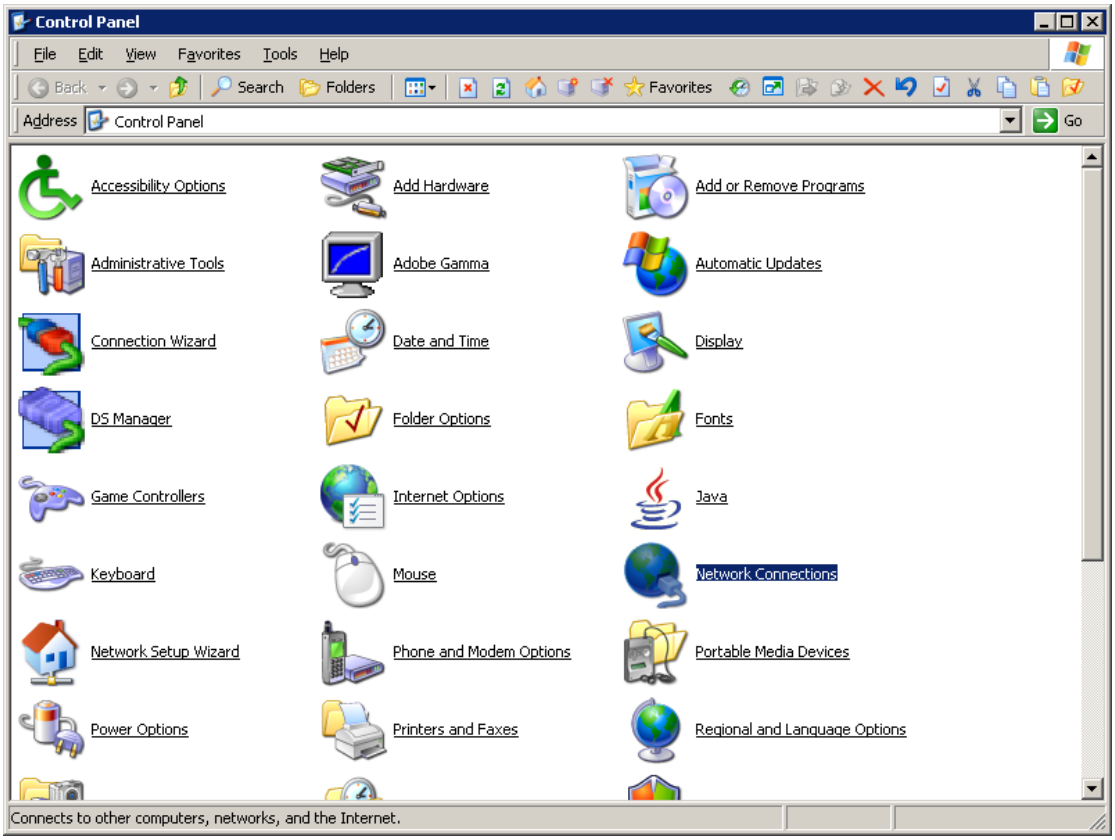
（this picture is the example to the modem for reference）



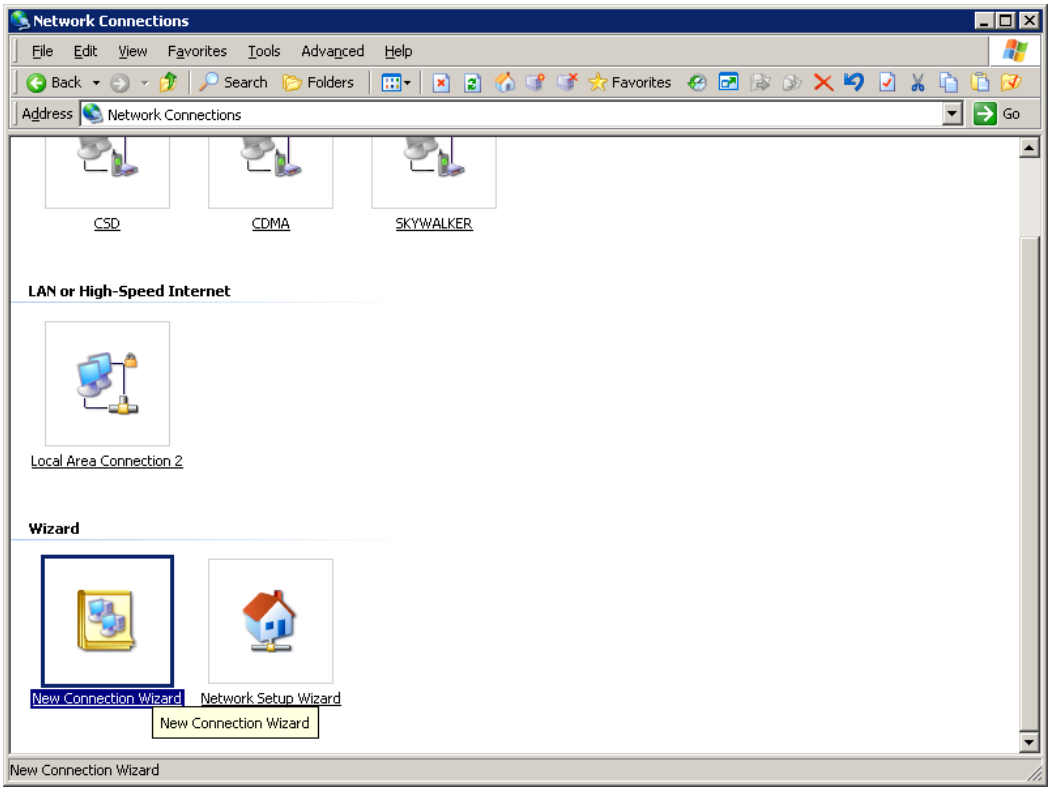
（this picture is the example to the modem for reference）

Step 3) Create Dial-up network

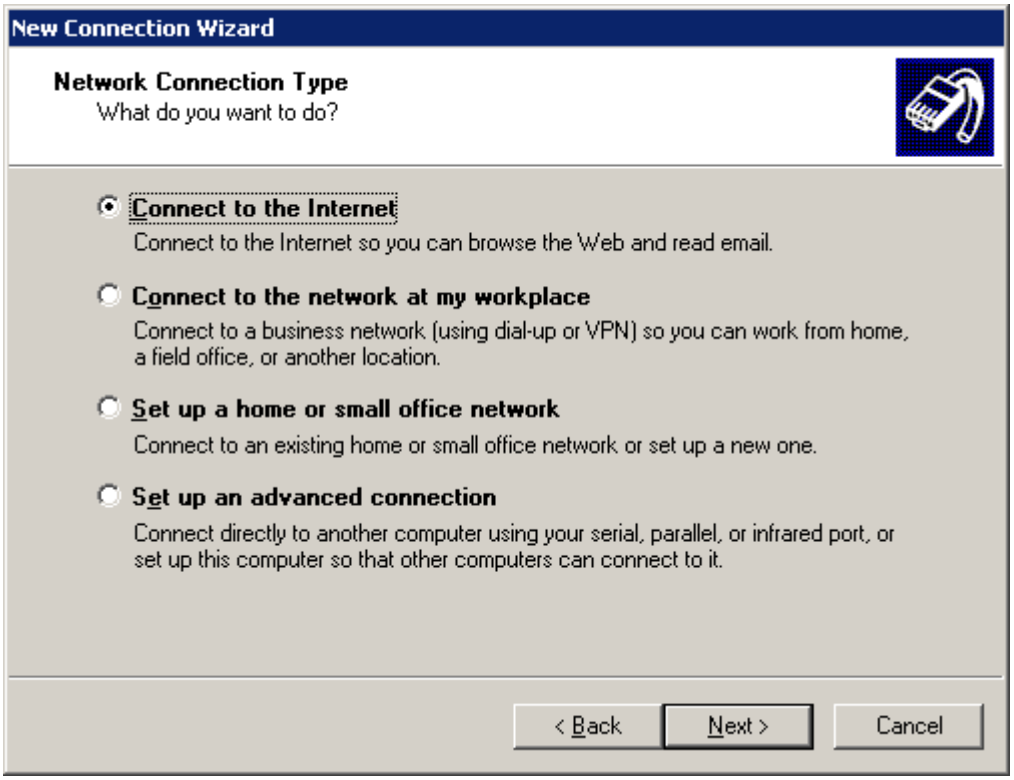
Setup your GPRS/CDMA/EDGE/EVDO/HSDPA/HSUPA/HSPA/HSPA+ Dial-up network. Open “Network Connections” at “Control Panel”.



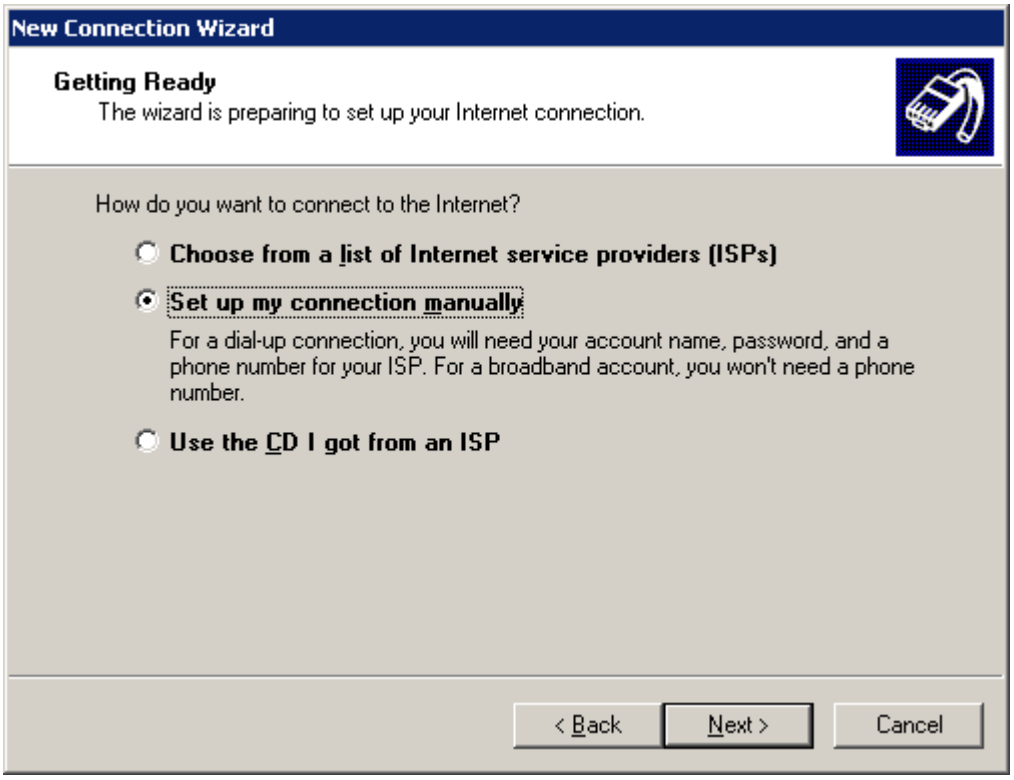
Double click “network Connection”, click “Next” to continue



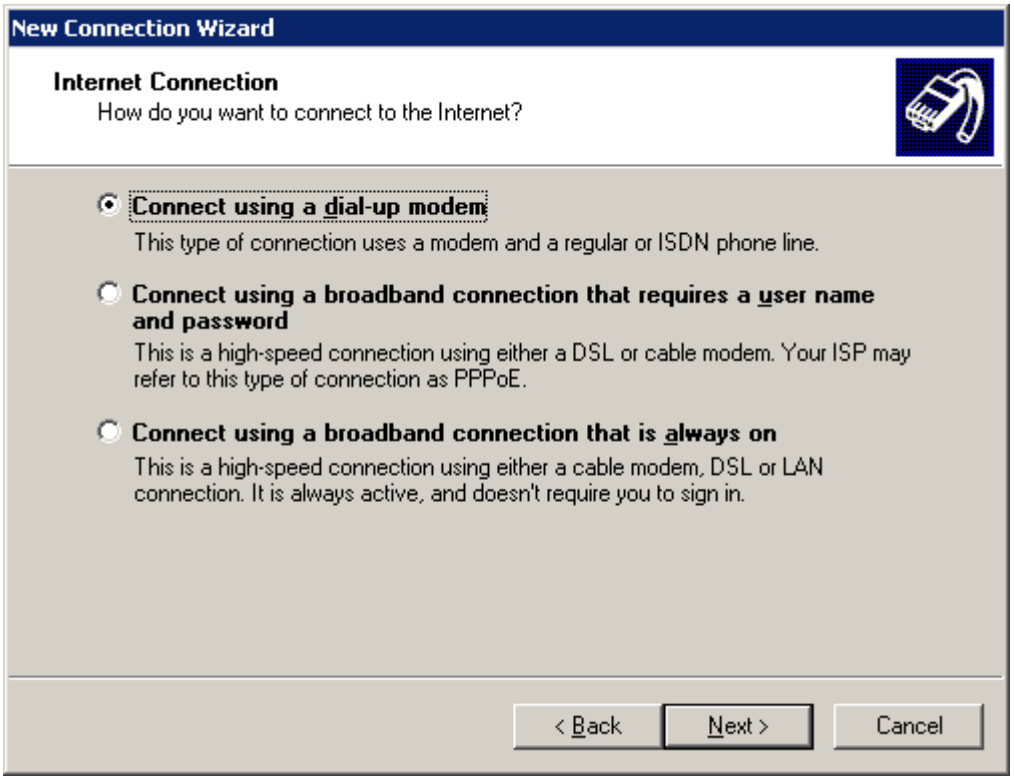
The Network Connection Wizard opens. Click “Next” to continue. Choose “Connect to the Internet” and click “Next”.


New Connection Wizard
Network Connection Type
What do you want to do?
Connect to the Internet
Connect to the Internet so you can browse the Web and read email.
Connect to the network at my workplace
Connect to a business network (using dial-up or VPN) so you can work from home, a field office, or another location.
Set up a home or small office network
Connect to an existing home or small office network or set up a new one.
Set up an advanced connection
Connect directly to another computer using your serial, parallel, or infrared port, or set up this computer so that other computers can connect to it.
< Back
Next >
Cancel

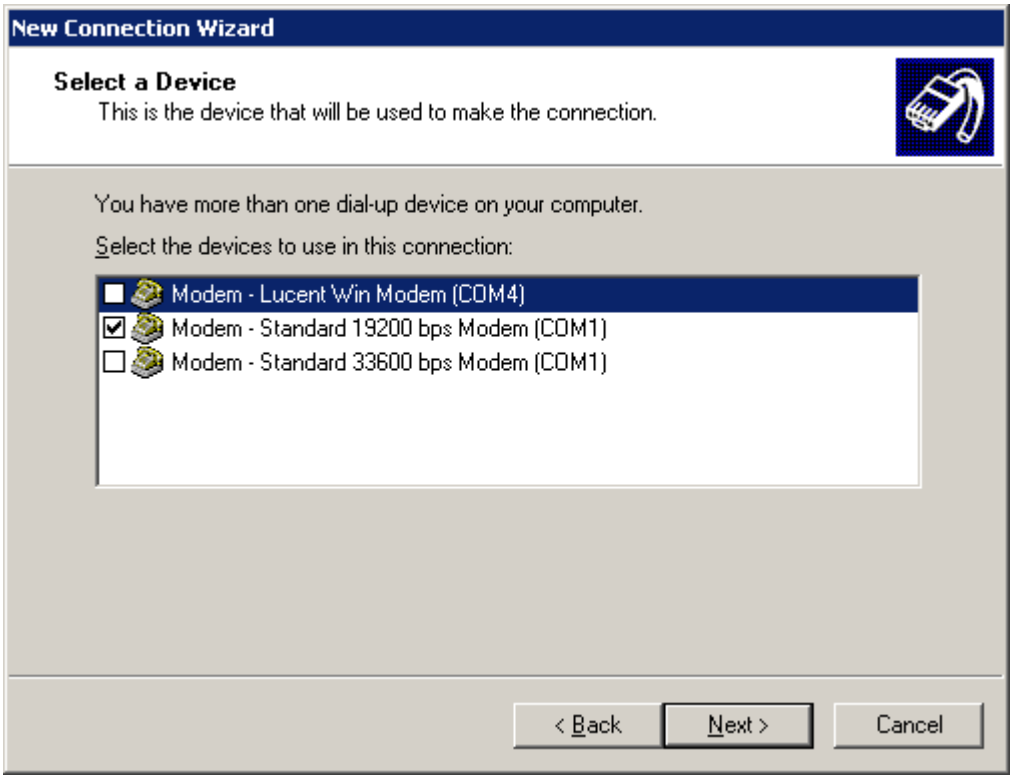
Select the options “Set up my connection manually” and click “Next”.


New Connection Wizard
Getting Ready
The wizard is preparing to set up your Internet connection.
How do you want to connect to the Internet?
Choose from a list of Internet service providers (ISPs)
Set up my connection manually
For a dial-up connection, you will need your account name, password, and a phone number for your ISP. For a broadband account, you won't need a phone number.
Use the CD I got from an ISP
< Back
Next >
Cancel

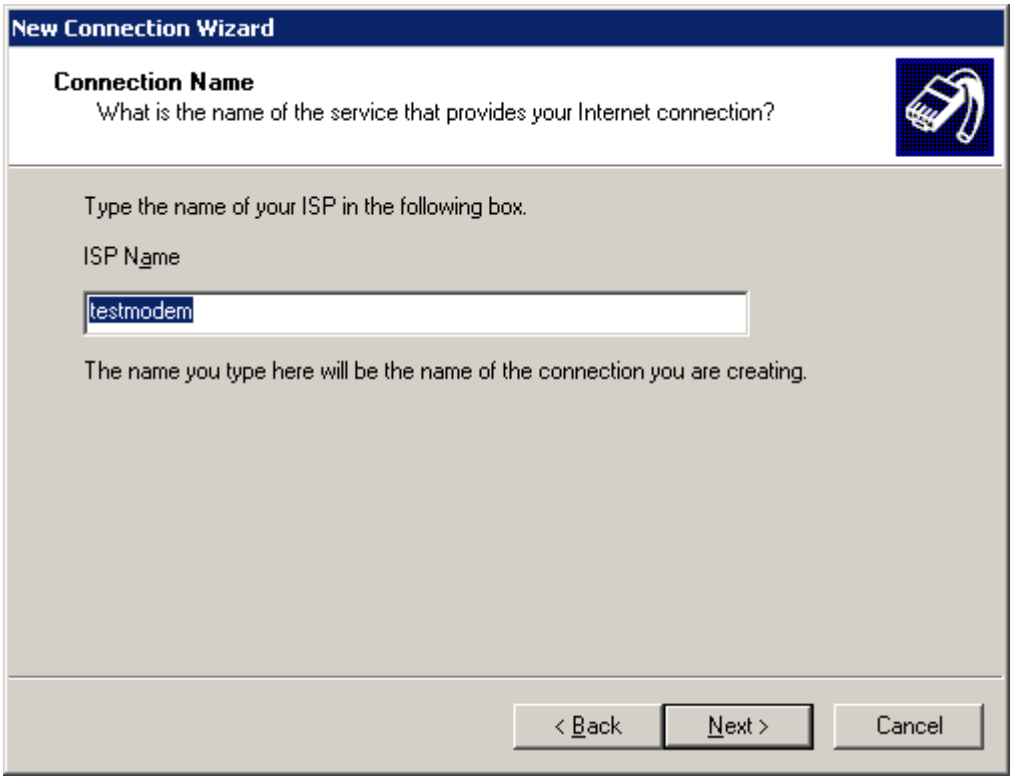
Select “connect using a dial-up modem” and click “Next” button to continue.


New Connection Wizard
Internet Connection
How do you want to connect to the Internet?
Connect using a dial-up modem
This type of connection uses a modem and a regular or ISDN phone line.
Connect using a broadband connection that requires a user name and password
This is a high-speed connection using either a DSL or cable modem. Your ISP may refer to this type of connection as PPPoE.
Connect using a broadband connection that is always on
This is a high-speed connection using either a cable modem, DSL or LAN connection. It is always active, and doesn't require you to sign in.
< Back
Next >
Cancel

Select the modem device which we want to use for the dial-up connection. Click “Next” to Continue.

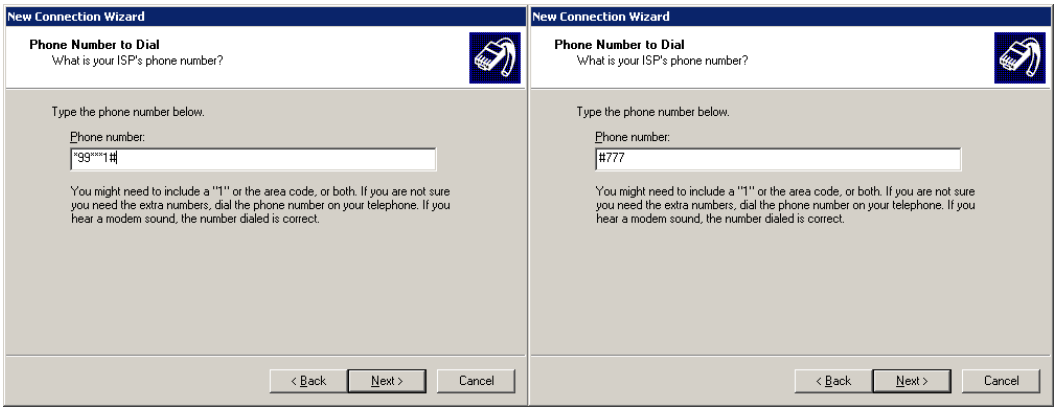

New Connection Wizard
Select a Device
This is the device that will be used to make the connection.
You have more than one dial-up device on your computer.
Select the devices to use in this connection:
Modem - Lucent Win Modem (COM4)
Modem - Standard 19200 bps Modem (COM1)
Modem - Standard 33600 bps Modem (COM1)
< Back
Next >
Cancel

Type an “Connection ISP name” and click “Next”.


New Connection Wizard
Connection Name
What is the name of the service that provides your Internet connection?
Type the name of your ISP in the following box.
ISP Name
testmodem
The name you type here will be the name of the connection you are creating.
< Back
Next >
Cancel

Then it shows the following picture. Depending on the network, input ISP phone number in “phone number” box,

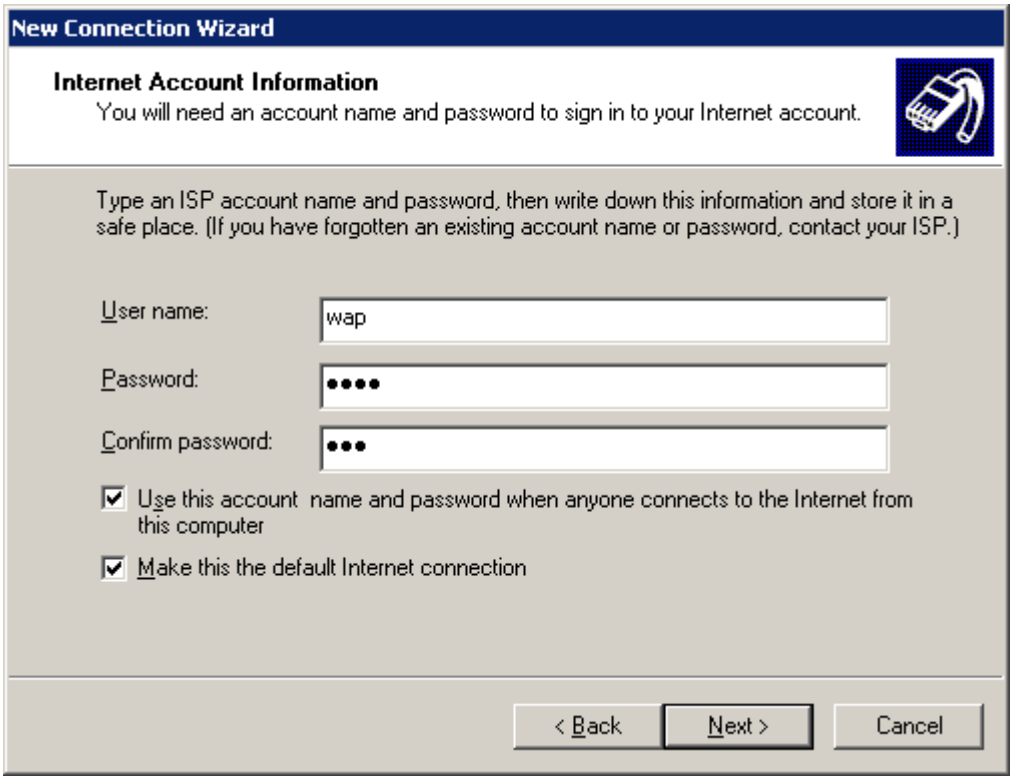
If modem type is GSM that standard phone number is”*99***1#” or “*99#”
If modem type is CDMA that standard phone number is ”#777”
Notes: Phone number (called also as dial number, or service code) is from ISP. Please confirm with your ISP to get it.


New Connection Wizard
Phone Number to Dial
What is your ISP's phone number?
Type the phone number below.
Phone number:
*99***1#
You might need to include a "1" or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct.
< Back
Next >
Cancel
New Connection Wizard
Phone Number to Dial
What is your ISP's phone number?
Type the phone number below.
Phone number:
#777
You might need to include a "1" or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct.
< Back
Next >
Cancel

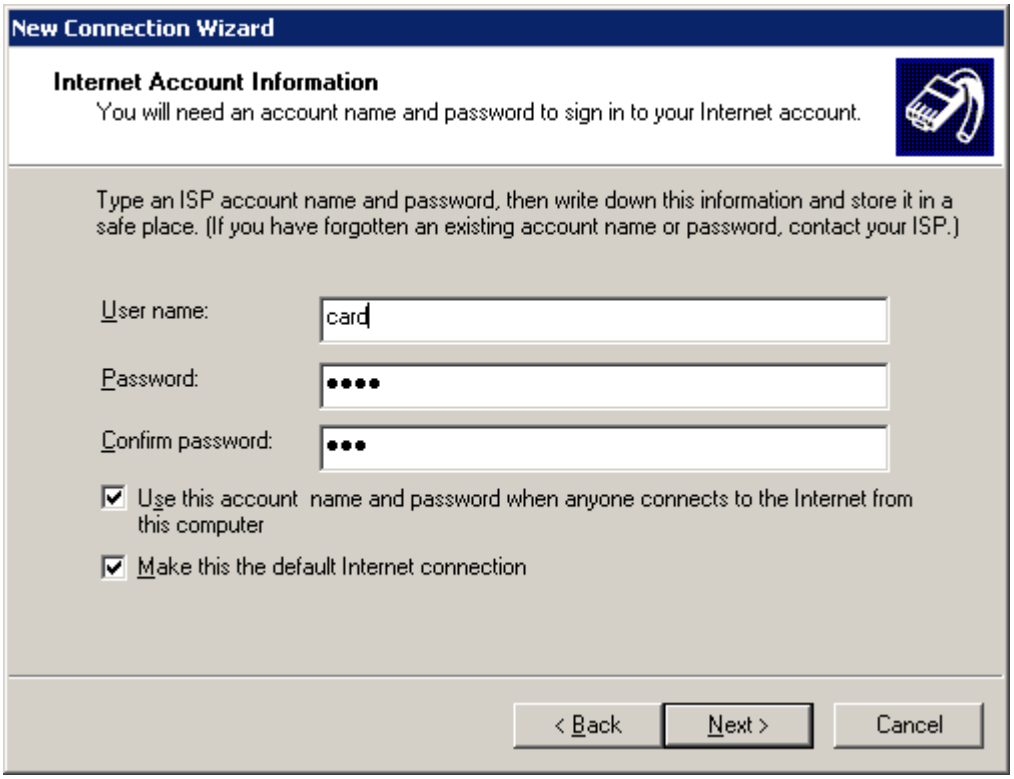
(Modem phone number)

Click “Next” button, it displays the following “Internet Account Information” window. You may be required to put a User name and a Password for the dial-up connection

Notes: the username, password is from the ISP/Network Carrier. Different ISP/Network Carrier provides different value.


New Connection Wizard
Internet Account Information
You will need an account name and password to sign in to your Internet account.
Type an ISP account name and password, then write down this information and store it in a safe place. (If you have forgotten an existing account name or password, contact your ISP.)
User name:
wap
Password:
Confirm password:
Use this account name and password when anyone connects to the Internet from this computer
Make this the default Internet connection
< Back
Next >
Cancel

(Example for China Mobile GPRS network)

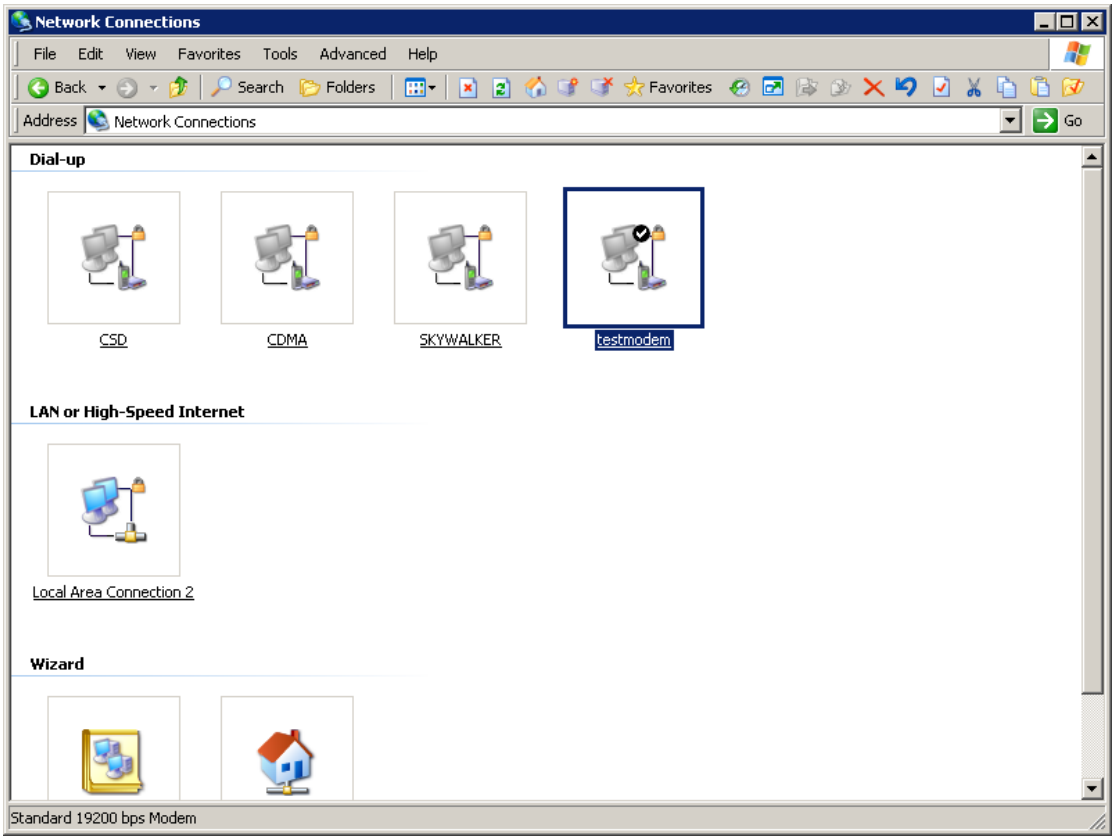

New Connection Wizard
Internet Account Information
You will need an account name and password to sign in to your Internet account.
Type an ISP account name and password, then write down this information and store it in a safe place. (If you have forgotten an existing account name or password, contact your ISP.)
User name:
card
Password:
Confirm password:
Use this account name and password when anyone connects to the Internet from this computer
Make this the default Internet connection
< Back
Next >
Cancel

(Example for China Telecom CDMA network)

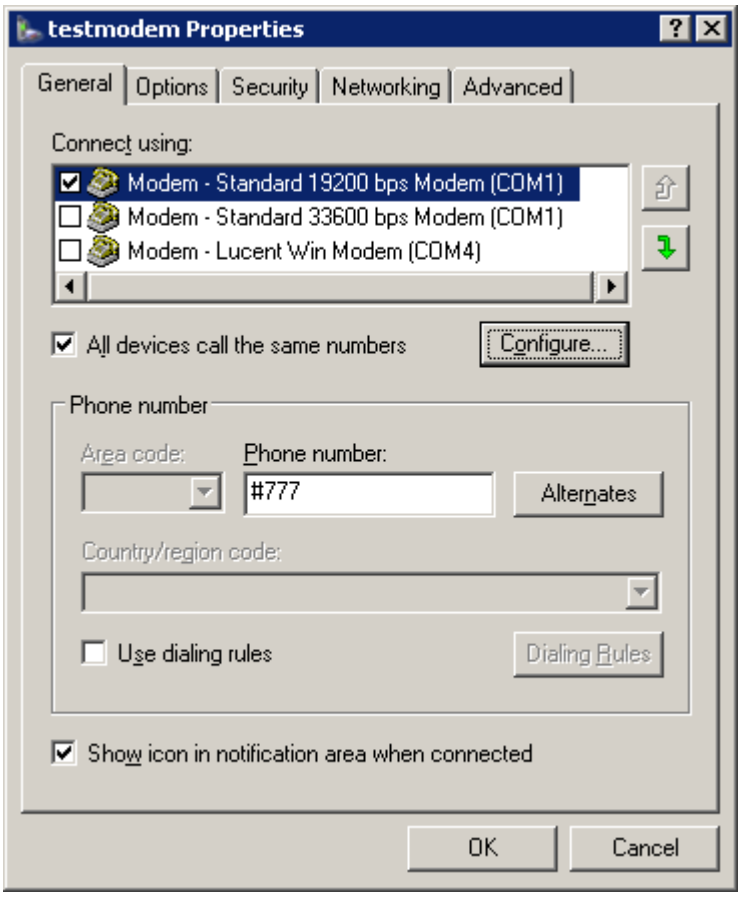
Click “Next” button, you can choose “Add a shortcut to this connection to my desktop”.
Click “Finish”.

New Connection Wizard
Completing the New Connection Wizard
You have successfully completed the steps needed to create the following connection:
testmodem
Make this the default connection
Share with all users of this computer
Use the same user name & password for everyone
The connection will be saved in the Network Connections folder.
Add a shortcut to this connection to my desktop
To create the connection and close this wizard, click Finish.
< Back
Finish
Cancel

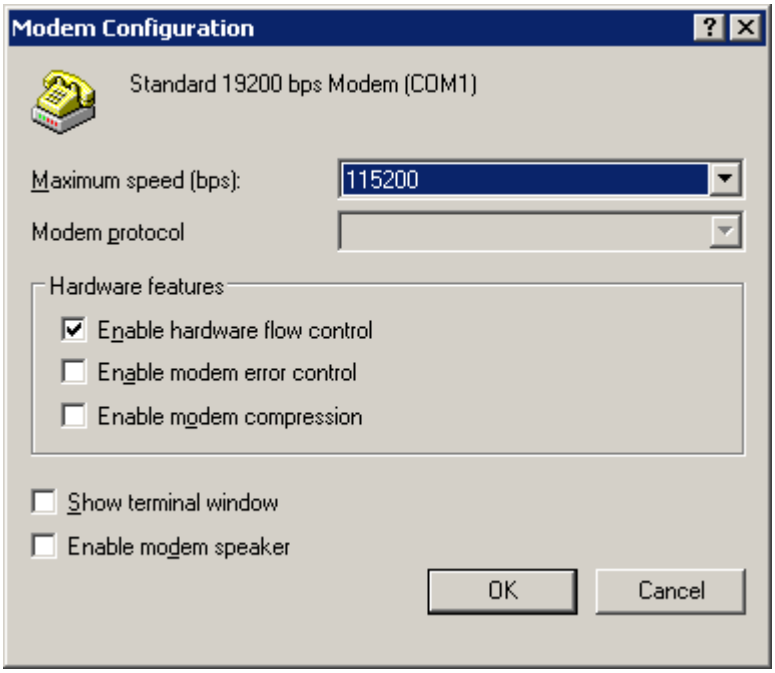
Every newly created dial-up connection should be configured before using it to establish a PPP connection. Select the dial-up connection you want to configure. And click the “Properties,



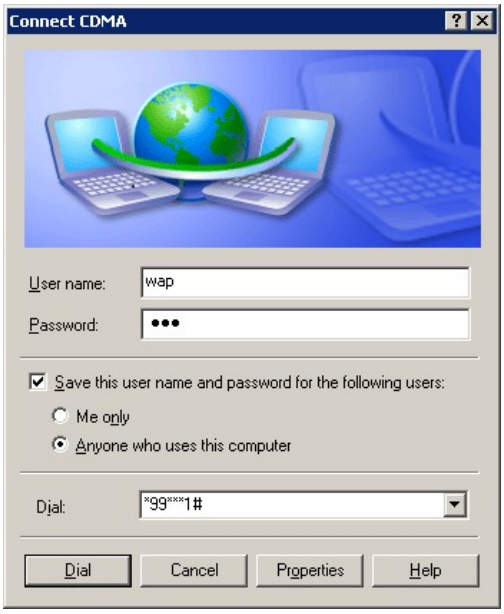
Select a right device as you’re just having setup modem. Then Click “configure” button to continue.

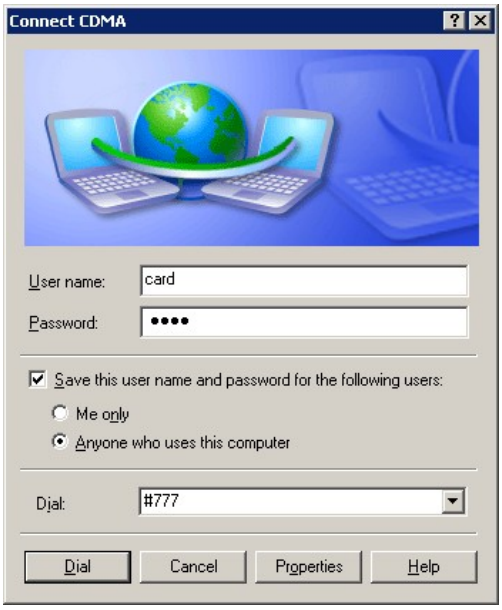


Setting “Maximum speed (bps)” as 115200 and click “OK” to finish modem configuration.



Step 4) Login on network





Double click new network connection, dial up directly, depends on the network, input user name and password both,

After login on network, the symbol of dial-up network will appear at the right corner of the PC, open IE and then you can browse web. If in connect network have any problem, please confirm:
A. Your SIM is working with data business, and enough balance.
B. Check if the M400 modem antenna is right installed.
C. Check if the parameters is right configged

Chapter 5

5 Install driver and software for M400 with USB port

Notes: this chapter is for M400 modem with USB port only, and for RS232 or RS485 port, please skips this chapter.

5.1 Driver installation

Step 1) please put the driver disk in the CD-ROM driver.
Step 2) run “setup.exe” or “install.exe” or “auto.exe” to start the installation

Step 3) follow the “next steps” to install it completely.
Step 4) connect the M400 modem with the PC, and power on it.
Step 5) the PC will detect the M400 modem and try to install the drivers automatically. If there is firewall to block the installation, please unblock it, otherwise the driver installation will be failed.
Step 6) the dialing software will be installed with the driver together. Please run it.

5.2 Driver installation

Run the installed software to configure and test the M400 modem.
Notes: please close the com port of hyper terminal or serial port tool, otherwise the software will indicates the com port error and exit.

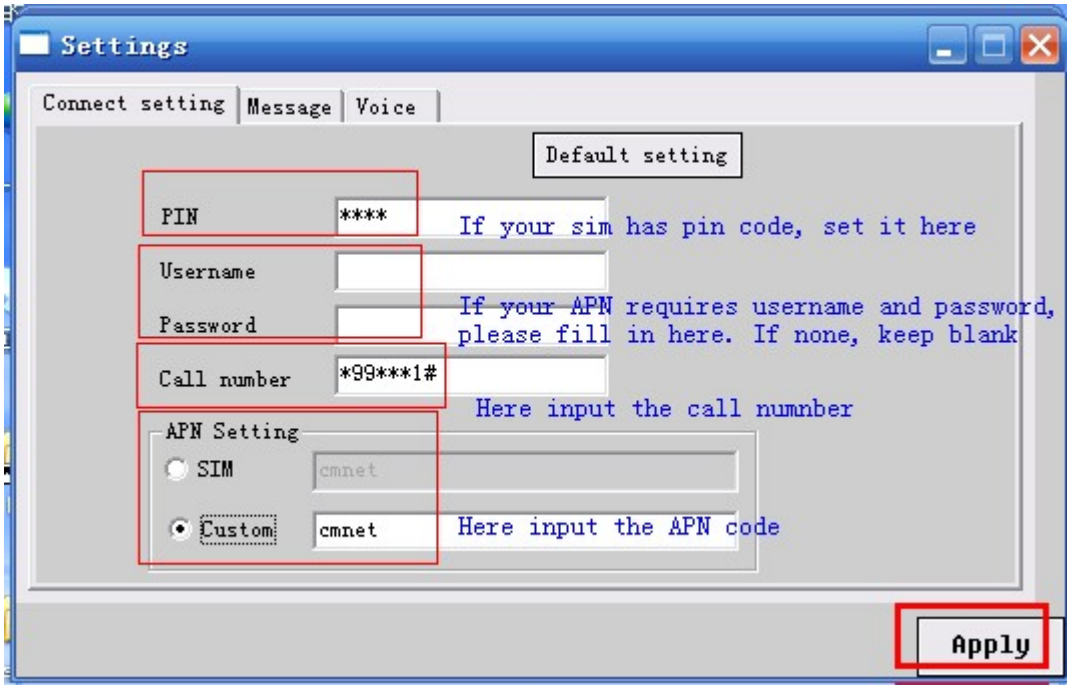
5.3 Example for USB GPRS Type

5.3.1 Dialup

1) it will show status if the sim card and signal is good.

2) Click Setting button to enter APN setting

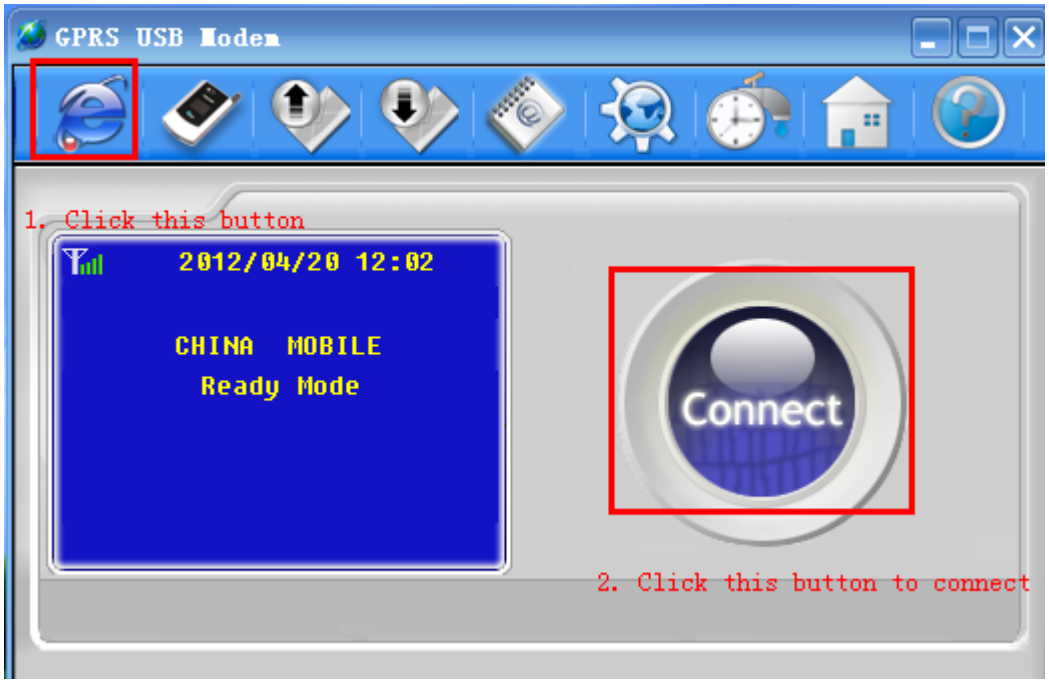
It prompt the following:



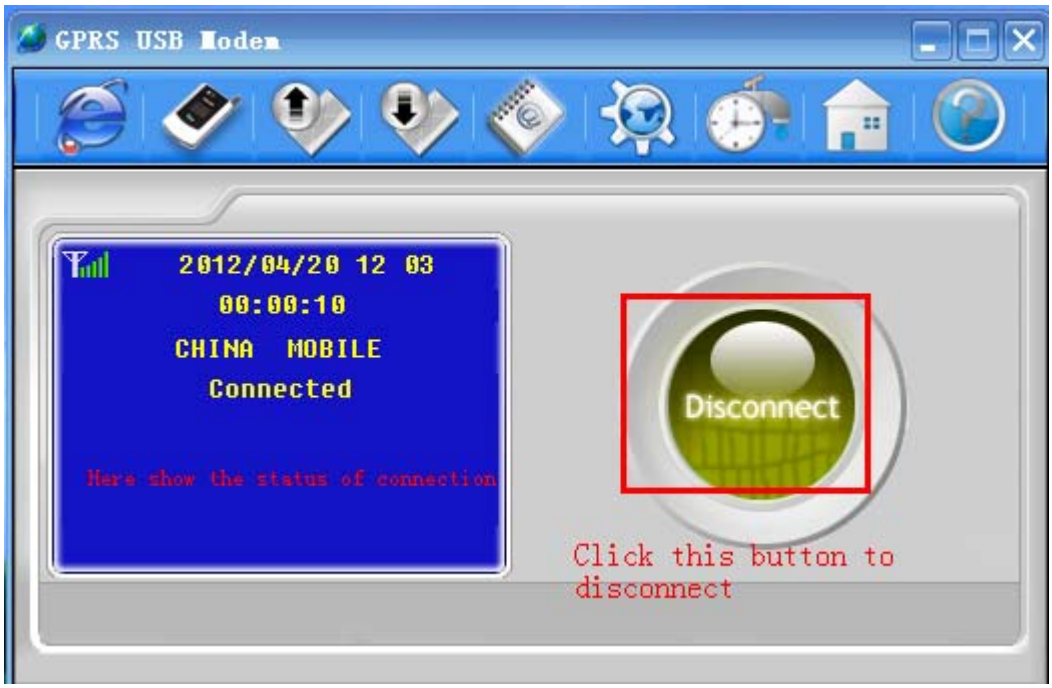
Notes: the “Username”, “Password”, “Call number” and “APN code” are from the network carrier. Please get the right value.

For example, here we use China Mobile carrier sim card, the info is as above. Different carrier get different value. Wrong setting will make the M400 modem no work.

3) Click “Internet” button

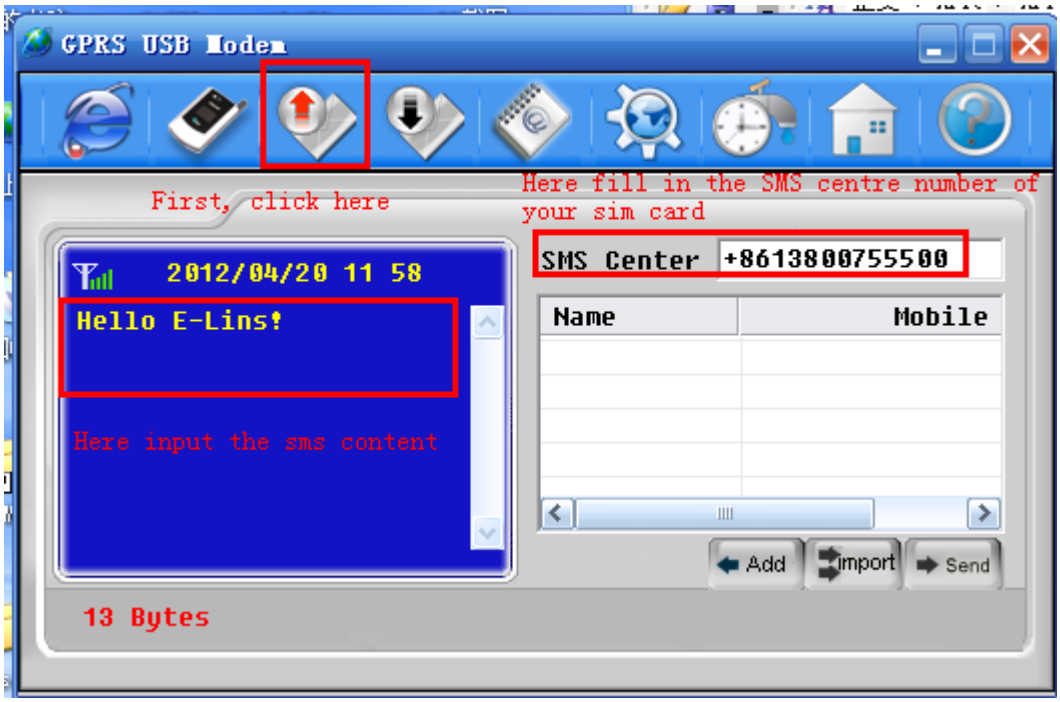


It will show status after connected.



5.3.2 SMS

1) click SMS button



2) click “Add” button to add the receiver’s phone number
3) input the content of the sms, and click “Send” button to send.